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**Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy** **DATE:** February 2011

| <b>APPROPRIATION/BUDGET ACTIVITY</b>  |                |                |                     | <b>R-1 ITEM NOMENCLATURE</b>                            |                      |                |                |                |                |                         |                   |
|---|----------------|----------------|---------------------|---|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> |                |                |                     | PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i> |                      |                |                |                |                |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>FY 2010</b> | <b>FY 2011</b> | <b>FY 2012 Base</b> | <b>FY 2012 OCO</b>                                      | <b>FY 2012 Total</b> | <b>FY 2013</b> | <b>FY 2014</b> | <b>FY 2015</b> | <b>FY 2016</b> | <b>Cost To Complete</b> | <b>Total Cost</b> |
| Total Program Element   | 143.546        | 159.151        | 121.455             | -   | 121.455              | 148.177        | 157.003        | 132.270        | 162.515        | Continuing              | Continuing        |
| 2329: <i>JPALS</i>  | 134.972        | 121.165        | 72.537              | -   | 72.537               | 78.832         | 37.517         | -              | -              | 0.000                   | 445.023           |
| 3228: <i>JPALS 1B</i>   | 8.574          | 37.986         | 48.918              | -   | 48.918               | 69.345         | 119.486        | 132.270        | 162.515        | Continuing              | Continuing        |

**A. Mission Description and Budget Item Justification**

This program element provides for the development, integration, and testing of the Joint Precision Approach and Landing System (JPALS), which will be applicable to Department of Defense (DoD) Ground systems, DoD aircraft, and Navy and Coast Guard air capable surface ships. JPALS will provide a rapidly deployable, adverse weather, adverse terrain, day-night precision approach and landing capability. Operating environments include fixed or permanent ground facilities, tactical facilities, and shipboard. JPALS will be interoperable with civil landing systems. The JPALS program was established in response to the Joint Mission Need Statement (MNS) for Precision Approach and Landing Capability (PALC), which was approved by the Chief of Naval Operations on 28 July 1994 and the Chief of Staff of the Air Force on 8 August 1994. The PALC MNS was validated by the Joint Requirements Oversight Council (JROC) on 29 August 1995. Army Joint Service participation was included in the 28 May 1996 Principal Deputy Under Secretary of Defense (Acquisition and Technology) Milestone 0 Acquisition Decision Memorandum, which also designated the Air Force as the Lead Service. In March 2004, the JPALS Overarching Integrated Program Team determined that the MNS should be converted to an Initial Capabilities Document (ICD). The JPALS ICD was approved by the JROC on 19 September 2005. On 21 July 2007 JROCM approved the JPALS Capability Development Document and designated the Navy as the Lead Service. The Analysis of Alternatives was finalized in 3Q FY2007. Milestone B was met 17 July 2008. At Milestone B, the Milestone Decision Authority separated Increment 1 into Inc 1A and Inc 1B.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2010</b> | <b>FY 2011</b> | <b>FY 2012 Base</b> | <b>FY 2012 OCO</b> | <b>FY 2012 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 149.680        | 159.151        | 123.959             | -                  | 123.959              |
| Current President's Budget                        | 143.546        | 159.151        | 121.455             | -                  | 121.455              |
| Total Adjustments                                 | -6.134         | -              | -2.504              | -                  | -2.504               |
| • Congressional General Reductions                |                | -              |                     |                    |                      |
| • Congressional Directed Reductions               |                | -              |                     |                    |                      |
| • Congressional Rescissions                       | -              | -              |                     |                    |                      |
| • Congressional Adds                              |                | -              |                     |                    |                      |
| • Congressional Directed Transfers                |                | -              |                     |                    |                      |
| • Reprogrammings                                  | -2.000         | -              |                     |                    |                      |
| • SBIR/STTR Transfer                              | -3.153         | -              |                     |                    |                      |
| • Program Adjustments                             | -              | -              | -1.203              | -                  | -1.203               |
| • Section 219 Reprogramming                       | -0.978         | -              | -                   | -                  | -                    |
| • Rate/Misc Adjustments                           | -              | -              | -1.301              | -                  | -1.301               |
| • Congressional General Reductions                | -0.003         | -              | -                   | -                  | -                    |
| Adjustments                                       |                |                |                     |                    |                      |

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| Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy  |   | DATE: February 2011 |
| APPROPRIATION/BUDGET ACTIVITY<br>1319: Research, Development, Test & Evaluation, Navy<br>BA 4: Advanced Component Development & Prototypes (ACD&P)  | R-1 ITEM NOMENCLATURE<br>PE 0603860N: JT Precision Approach & Ldg Sys |                     |
| <p><b><u>Change Summary Explanation</u></b></p> <p>Technical: Not applicable.</p> <p>Schedule:</p> <p>Project 2329 - Updated to reflect latest Engineering Development Model delivery schedule, refined IT-1-3/OA schedule and moved the Full Rate Production Award to 3QFY15 in accordance with the latest program schedule. Critical Design Review (CDR) conducted 18-20 Dec 2010.</p> <p>Project 3228 - Inc-1B schedule update reflects a 1-2 quarter slide in several events to incorporate schedule inputs from original equipment manufacturers, allow for multiple subcontractor component competitions and risk mitigation testing, and account for technical complexity.</p> |   |                     |

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|---|---------|---------|--------------|---|---------------|---------|---------|------------------------|---------|------------------|------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy   |         |         |              |   |               |         |         | DATE: February 2011    |         |                  |            |
| APPROPRIATION/BUDGET ACTIVITY<br>1319: Research, Development, Test & Evaluation, Navy<br>BA 4: Advanced Component Development & Prototypes (ACD&P)  |         |         |              | R-1 ITEM NOMENCLATURE<br>PE 0603860N: JT Precision Approach & Ldg Sys |               |         |         | PROJECT<br>2329: JPALS |         |                  |            |
| COST (\$ in Millions)   | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO   | FY 2012 Total | FY 2013 | FY 2014 | FY 2015                | FY 2016 | Cost To Complete | Total Cost |
| 2329: JPALS   | 134.972 | 121.165 | 72.537       | -   | 72.537        | 78.832  | 37.517  | -                      | -       | 0.000            | 445.023    |
| Quantity of RDT&E Articles  | 1       | 1       | 6            | 0   | 6             | 0       | 0       | 0                      | 0       |                  |            |
| A. Mission Description and Budget Item Justification  |         |         |              |   |               |         |         |                        |         |                  |            |
| Joint Precision Approach and Landing System (JPALS) Increment 1A provides for development, integration, installation, and test of Sea-Based JPALS on all air capable ships, in accordance with the JPALS Capability Development Document (CDD). This effort includes the build and test of Ship Global Positioning System/ Inertial Navigation System based precision approach and landing systems to replace obsolete AN/SPN-46 and AN/SPN-35 Systems. This requirement supports the JPALS Integration on CVN/LHA/LHD-class ships, DDG-1000 class ships (TACAN Replacement), establishes requirements for air integration, and provides critical enabling technology for Joint Strike Fighter and Navy Unmanned Combat Air System (UCAS). Includes risk reduction efforts and trade studies for other air capable ships. |         |         |              |   |               |         |         |                        |         |                  |            |
| JPALS Engineering Development Model (EDM) test articles will be delivered to support system development and demonstration, as follows:  |         |         |              |   |               |         |         |                        |         |                  |            |
| FY10 - 1 unit for Contractor Ship Integration Lab (CSIL)<br>FY11 - 1 unit for Government Landing Systems Test Facility<br>FY12 - 6 EDMs for Shipboard Testing (CVN + LHD/LHA)   |         |         |              |   |               |         |         |                        |         |                  |            |
| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)  |         |         |              |   |               |         |         | FY 2010                | FY 2011 | FY 2012          |            |
| Title: JPALS Engineering and Manufacturing Development (EMD) Increment 1A - Shipboard<br><br>Articles:<br><br>Description: JPALS Increment 1A provides for development, integration, installation, and test of Sea-Based JPALS.<br><br>FY 2010 Accomplishments:<br>Completed Preliminary Design Review and CSIL Integration.<br><br>FY 2011 Plans:<br>Complete Critical Design Review and Aircraft Integration Guide (AIG) delivery and begin Integrated Test (IT) 1-3.<br><br>FY 2012 Plans:<br>Continue IT 1-3 and Operational Assessment test events.  |         |         |              |   |               |         |         | 130.139                | 117.996 | 72.537           |            |
|   |         |         |              |   |               |         |         | 1                      | 1       | 6                |            |
|   |         |         |              |   |               |         |         |                        |         |                  |            |
|   |         |         |              |   |               |         |         |                        |         |                  |            |
| Title: JPALS EMD Increment 1A - AIG   |         |         |              |   |               |         |         | 4.833                  | 3.169   | -                |            |
| Articles:   |         |         |              |   |               |         |         | 0                      | 0       |                  |            |

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|---|---------|---------|-----------------|----------------|---|---------|---------|---------|---------|------------------------|------------|---------|
| Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy   |         |         |                 |                |   |         |         |         |         | DATE: February 2011    |            |         |
| APPROPRIATION/BUDGET ACTIVITY<br>1319: Research, Development, Test & Evaluation, Navy<br>BA 4: Advanced Component Development & Prototypes (ACD&P)  |         |         |                 |                | R-1 ITEM NOMENCLATURE<br>PE 0603860N: JT Precision Approach & Ldg Sys |         |         |         |         | PROJECT<br>2329: JPALS |            |         |
| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)  |         |         |                 |                |   |         |         |         |         | FY 2010                | FY 2011    | FY 2012 |
| Description: AIG and associated derived requirements are the top level performance requirements for Aircraft Integration. This guide will serve as the integration document for air platforms.  |         |         |                 |                |   |         |         |         |         |                        |            |         |
| FY 2010 Accomplishments:<br>Continued development of the AIG and JPALS Aircraft System Specification.   |         |         |                 |                |   |         |         |         |         |                        |            |         |
| FY 2011 Plans:<br>Verify Air Integration requirements with Test A/C.  |         |         |                 |                |   |         |         |         |         |                        |            |         |
| Accomplishments/Planned Programs Subtotals  |         |         |                 |                |   |         |         |         |         | 134.972                | 121.165    | 72.537  |
| C. Other Program Funding Summary (\$ in Millions)   |         |         |                 |                |   |         |         |         |         |                        |            |         |
| Line Item   | FY 2010 | FY 2011 | FY 2012<br>Base | FY 2012<br>OCO | FY 2012<br>Total  | FY 2013 | FY 2014 | FY 2015 | FY 2016 | Cost To<br>Complete    | Total Cost |         |
| • OPN/2867: JPALS   | 0.000   | 0.000   | 0.000           | 0.000          | 0.000   | 0.000   | 15.723  | 72.865  | 74.104  | 81.035                 | 243.727    |         |
| D. Acquisition Strategy   |         |         |                 |                |   |         |         |         |         |                        |            |         |
| Technology Development phase was conducted jointly by NAVAIRSYSCOM (PMA213), USAF Electronic Systems Command (Global Air) and multiple industry partners. This effort provided the concept of operations, performance specifications and technology readiness levels necessary to provide the foundation from which to launch the Increment 1 System Development and Demonstration (SDD) phase development. In March 2007, overall joint program leadership transferred from the USAF to the USN. The JPALS 1A phase reached MS B on 17 July 2008 and the SDD phase development contract was awarded on 17 July 2008. Tasking consists of seabased JPALS, related ship and airborne reference systems, end-to-end software algorithms, necessary ship installation hardware, test equipment, system simulation software, and other RDT&E deliverable products to the joint team. The SDD contract was decided after full and open competition. JPALS Increment 1A will be developed by the Navy with an open system architecture in order to facilitate the compatible integration of many different aircraft and avionics architectures. As Lead Service, the Navy will manage the Joint Program to develop all JPALS increments. An updated JPALS Acquisition Strategy separated Increment 1 into two Increments (Inc 1A and Inc 1B). JPALS Increment 1A provides for development, integration, installation, and test of Sea-Based JPALS to meet IOC of all air capable ships, in accordance with the JPALS CDD. Additionally, this requirement supports the JPALS Integration on LHA/LHD-class ships and DDG-1000 class ships and provides critical enabling technology for Joint Strike Fighter and Navy UCAS. |         |         |                 |                |   |         |         |         |         |                        |            |         |
| E. Performance Metrics  |         |         |                 |                |   |         |         |         |         |                        |            |         |
| MS B conducted 17 July 2008 and approval granted for program progression to EMD phase. Preliminary Design Review conducted first quarter FY 2010. Critical Design Review conducted first quarter FY2011. EDM 2 Delivery scheduled for fourth quarter FY2011.  |         |         |                 |                |   |         |         |         |         |                        |            |         |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

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|---|---|-------------------------------|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>1319: Research, Development, Test & Evaluation, Navy<br>BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603860N: JT Precision Approach & Ldg<br>Sys | <b>PROJECT</b><br>2329: JPALS |
|---|---|-------------------------------|

| Product Development (\$ in Millions)     |                              |                                   |                              | FY 2011 |               | FY 2012<br>Base |               | FY 2012<br>OCO |               | FY 2012<br>Total |                     |            |                                |
|--|------------------------------|-----------------------------------|------------------------------|---------|---------------|-----------------|---------------|----------------|---------------|------------------|---------------------|------------|--------------------------------|
| Cost Category Item                       | Contract<br>Method<br>& Type | Performing<br>Activity & Location | Total Prior<br>Years<br>Cost | Cost    | Award<br>Date | Cost            | Award<br>Date | Cost           | Award<br>Date | Cost             | Cost To<br>Complete | Total Cost | Target<br>Value of<br>Contract |
| Primary Hardware Development             | C/CPAF                       | Raytheon:Fullerton, CA            | 162.879                      | 63.556  | Jan 2011      | 40.519          | Jan 2012      | -              |               | 40.519           | 49.100              | 316.054    | 316.054                        |
| Aircraft Integration-Non Specific        | Various                      | Var:Var                           | 1.744                        | 0.308   | Jan 2011      | -               |               | -              |               | -                | 0.000               | 2.052      | 2.052                          |
| Aircraft Integration-F/A-18E/F, EA-18G   | Various                      | Boeing:St. Louis, MO              | 3.066                        | 0.123   | Jan 2011      | -               |               | -              |               | -                | 0.000               | 3.189      | 3.189                          |
| Aircraft integration-MH-60R/S            | Various                      | Lockheed Martin:Owego, NY         | 2.869                        | 0.103   | Jan 2011      | -               |               | -              |               | -                | 0.000               | 2.972      | 2.972                          |
| Aircraft Integration-F-35 JSF            | Various                      | Lockheed Martin:Fort Worth, TX    | 4.000                        | 0.093   | Jan 2011      | -               |               | -              |               | -                | 0.000               | 4.093      | 4.093                          |
| Aircraft Integration-MH-60R/S            | Various                      | Sikorsky:Stratford, CT            | 0.600                        | 0.062   | Jan 2011      | -               |               | -              |               | -                | 0.000               | 0.662      | 0.662                          |
| Aircraft Integration-C-2A, E-2D          | Various                      | Northrup Grumman:Bethpage, NY     | 0.802                        | 0.093   | Jan 2011      | -               |               | -              |               | -                | 0.000               | 0.895      | 0.895                          |
| Aircraft Integration-Systems Engineering | WR                           | NAWCAD:Pax River, MD              | 10.306                       | 0.977   | Dec 2010      | -               |               | -              |               | -                | 0.000               | 11.283     |                                |
| Ship Integration                         | WR                           | NAWCAD:Pax River, MD              | 13.443                       | 7.129   | Dec 2010      | 2.500           | Dec 2011      | -              |               | 2.500            | 15.000              | 38.072     |                                |
| Award Fee                                | C/CPAF                       | Var:Var                           | 5.572                        | 3.112   | Aug 2011      | 2.000           | Jan 2012      | -              |               | 2.000            | 0.000               | 10.684     | 10.684                         |
| Primary Hardware Development-TD          | Various                      | Var:Var                           | 105.504                      | -       |               | -               |               | -              |               | -                | 0.000               | 105.504    | 105.504                        |
| <b>Subtotal</b>                          |                              |                                   | 310.785                      | 75.556  |               | 45.019          |               | -              |               | 45.019           | 64.100              | 495.460    |                                |

**Remarks**

The Primary Hardware Development contract with Raytheon is a combined CPAF and CPIF contract.  
Period 1 (15 Sep. 2008-6 Nov. 2009) Award Fee paid on 24 Feb. 2010. Payout was 74.3% of potential fee.

| Support (\$ in Millions) |                              |                                   |                              | FY 2011 |               | FY 2012<br>Base |               | FY 2012<br>OCO |               | FY 2012<br>Total |                     |            |                                |
|--------------------------|------------------------------|-----------------------------------|------------------------------|---------|---------------|-----------------|---------------|----------------|---------------|------------------|---------------------|------------|--------------------------------|
| Cost Category Item       | Contract<br>Method<br>& Type | Performing<br>Activity & Location | Total Prior<br>Years<br>Cost | Cost    | Award<br>Date | Cost            | Award<br>Date | Cost           | Award<br>Date | Cost             | Cost To<br>Complete | Total Cost | Target<br>Value of<br>Contract |
| Development Support      | Various                      | Var:Var                           | 21.514                       | -       |               | -               |               | -              |               | -                | 0.000               | 21.514     |                                |

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy   |                        |                                |                        |   |            |              |            |                        |            |               | DATE: February 2011 |            |                          |  |
| APPROPRIATION/BUDGET ACTIVITY<br>1319: Research, Development, Test & Evaluation, Navy<br>BA 4: Advanced Component Development & Prototypes (ACD&P) |                        |                                |                        | R-1 ITEM NOMENCLATURE<br>PE 0603860N: JT Precision Approach & Ldg Sys |            |              |            | PROJECT<br>2329: JPALS |            |               |                     |            |                          |  |
| Support (\$ in Millions)   |                        |                                |                        | FY 2011   |            | FY 2012 Base |            | FY 2012 OCO            |            | FY 2012 Total |                     |            |                          |  |
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost  | Award Date | Cost         | Award Date | Cost                   | Award Date | Cost          | Cost To Complete    | Total Cost | Target Value of Contract |  |
| Systems Engineering Support-SDD  | WR                     | NAWCAD:Pax River, MD           | 15.607                 | 15.846  | Dec 2010   | 8.080        | Dec 2011   | -                      |            | 8.080         | 17.729              | 57.262     |                          |  |
| Integrated Logistics Support   | WR                     | NAWCAD:Pax River, MD           | 7.432                  | 3.659   | Dec 2010   | 3.302        | Dec 2011   | -                      |            | 3.302         | 6.115               | 20.508     |                          |  |
| Subtotal   |                        |                                | 44.553                 | 19.505  |            | 11.382       |            | -                      |            | 11.382        | 23.844              | 99.284     |                          |  |
| Test and Evaluation (\$ in Millions)   |                        |                                |                        | FY 2011   |            | FY 2012 Base |            | FY 2012 OCO            |            | FY 2012 Total |                     |            |                          |  |
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost  | Award Date | Cost         | Award Date | Cost                   | Award Date | Cost          | Cost To Complete    | Total Cost | Target Value of Contract |  |
| Developmental Test & Evaluation  | WR                     | NAWCAD:Pax River, MD           | 18.823                 | 10.331  | Dec 2010   | 5.020        | Dec 2011   | -                      |            | 5.020         | 15.555              | 49.729     |                          |  |
| Operational Test & Evaluation  | WR                     | COMOPTEVFOR:Norfolk, VA        | 1.320                  | 0.389   | Dec 2010   | 0.390        | Dec 2011   | -                      |            | 0.390         | 1.750               | 3.849      |                          |  |
| Subtotal   |                        |                                | 20.143                 | 10.720  |            | 5.410        |            | -                      |            | 5.410         | 17.305              | 53.578     |                          |  |
| Management Services (\$ in Millions)   |                        |                                |                        | FY 2011   |            | FY 2012 Base |            | FY 2012 OCO            |            | FY 2012 Total |                     |            |                          |  |
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost  | Award Date | Cost         | Award Date | Cost                   | Award Date | Cost          | Cost To Complete    | Total Cost | Target Value of Contract |  |
| Government Engineering Support   | WR                     | NAWCAD:Pax River, MD           | 32.452                 | 12.362  | Dec 2010   | 7.400        | Dec 2011   | -                      |            | 7.400         | 6.435               | 58.649     |                          |  |
| Program Management Support-Cost  | WR                     | NAWCAD:Pax River, MD           | 8.007                  | 1.100   | Dec 2010   | 1.102        | Dec 2011   | -                      |            | 1.102         | 3.627               | 13.836     |                          |  |
| PM Support-MSS   | C/CPFF                 | Amelex:California, MD          | 6.023                  | 1.402   | Dec 2010   | 1.764        | Dec 2011   | -                      |            | 1.764         | 1.637               | 10.826     | 20.820                   |  |
| Travel   | WR                     | NAVAIR:Pax River, MD           | 1.918                  | 0.520   | Dec 2010   | 0.460        | Dec 2011   | -                      |            | 0.460         | 1.052               | 3.950      |                          |  |
| Subtotal   |                        |                                | 48.400                 | 15.384  |            | 10.726       |            | -                      |            | 10.726        | 12.751              | 87.261     |                          |  |

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| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2012 Navy   |                               |                |   |                     |  |                    |                                      | <b>DATE:</b> February 2011 |                         |                   |                                 |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>1319: <i>Research, Development, Test &amp; Evaluation, Navy</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> |                               |                | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i> |                     |  |                    | <b>PROJECT</b><br>2329: <i>JPALS</i> |                            |                         |                   |                                 |
|   | <b>Total Prior Years Cost</b> | <b>FY 2011</b> |   | <b>FY 2012 Base</b> |  | <b>FY 2012 OCO</b> |                                      | <b>FY 2012 Total</b>       | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Project Cost Totals</b>  | 423.881                       | 121.165        |   | 72.537              |  | -                  |                                      | 72.537                     | 118.000                 | 735.583           |                                 |
| <b>Remarks</b>  |                               |                |   |                     |  |                    |                                      |                            |                         |                   |                                 |
|   |                               |                |   |                     |  |                    |                                      |                            |                         |                   |                                 |

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2012 Navy  |   | <b>DATE:</b> February 2011           |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>1319: <i>Research, Development, Test &amp; Evaluation, Navy</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i> | <b>PROJECT</b><br>2329: <i>JPALS</i> |
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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy   |   |                                      | <b>DATE:</b> February 2011 |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>1319: <i>Research, Development, Test &amp; Evaluation, Navy</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i> | <b>PROJECT</b><br>2329: <i>JPALS</i> |                            |

**Schedule Details**

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>JPALS INC 1A</b>   |         |      |         |      |
| Acquisition Milestones: MS C  | 2       | 2013 | 2       | 2013 |
| Acquisition Milestones: IOC   | 4       | 2014 | 4       | 2014 |
| Acquisition Milestones: Full Rate Production Decision                               | 3       | 2015 | 3       | 2015 |
| Systems Development: Engineering and Manufacturing Development                      | 1       | 2010 | 2       | 2013 |
| Systems Development: Reviews: Preliminary Design Review (PDR)                       | 1       | 2010 | 1       | 2010 |
| Systems Development: Reviews: Critical Design Review (CDR)                          | 1       | 2011 | 1       | 2011 |
| Systems Development: EDM Deliveries: Engineering Development Model (EDM) 1 Delivery | 4       | 2010 | 4       | 2010 |
| Systems Development: EDM Deliveries: EDM 2 Delivery                                 | 4       | 2011 | 4       | 2011 |
| Systems Development: EDM Deliveries: EDM 3 Delivery                                 | 1       | 2012 | 1       | 2012 |
| Systems Development: EDM Deliveries: EDM 5 Delivery                                 | 2       | 2012 | 2       | 2012 |
| Systems Development: EDM Deliveries: EDM 7 Delivery                                 | 3       | 2012 | 3       | 2012 |
| Systems Development: EDM Deliveries: JSF Ship Integration / Flight Test             | 1       | 2012 | 3       | 2014 |
| Test & Evaluation: Integrated Test (IT)-1-3/Operational Assessment (OA)             | 4       | 2011 | 4       | 2012 |
| Test & Evaluation: IT-4   | 3       | 2013 | 4       | 2013 |
| Test & Evaluation: Initial Operational Test and Evaluation (IOT&E)                  | 1       | 2014 | 4       | 2014 |
| Production Milestones: Aircraft Integration Guide (AIG) Delivery                    | 1       | 2011 | 1       | 2011 |
| Production Milestones: RDT&E Low Rate Initial Production (LRIP) Contract Award      | 3       | 2013 | 3       | 2013 |
| Production Milestones: Full Rate Production (FRP) Contract Award                    | 3       | 2015 | 3       | 2015 |
| Deliveries: RDT&E LRIP Delivery Qty 3   | 3       | 2013 | 3       | 2013 |

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|--|---------|---------|--------------|---|---------------|---------|---------|---------------------------|---------------------|------------------|------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy  |         |         |              |   |               |         |         |                           | DATE: February 2011 |                  |            |
| APPROPRIATION/BUDGET ACTIVITY<br>1319: Research, Development, Test & Evaluation, Navy<br>BA 4: Advanced Component Development & Prototypes (ACD&P)   |         |         |              | R-1 ITEM NOMENCLATURE<br>PE 0603860N: JT Precision Approach & Ldg Sys |               |         |         | PROJECT<br>3228: JPALS 1B |                     |                  |            |
| COST (\$ in Millions)  | FY 2010 | FY 2011 | FY 2012 Base | FY 2012 OCO   | FY 2012 Total | FY 2013 | FY 2014 | FY 2015                   | FY 2016             | Cost To Complete | Total Cost |
| 3228: JPALS 1B   | 8.574   | 37.986  | 48.918       | -   | 48.918        | 69.345  | 119.486 | 132.270                   | 162.515             | Continuing       | Continuing |
| Quantity of RDT&E Articles   | 0       | 0       | 0            | 0   | 0             | 0       | 0       | 0                         | 0                   |                  |            |
| A. Mission Description and Budget Item Justification   |         |         |              |   |               |         |         |                           |                     |                  |            |
| Joint Precision Approach and Landing System (JPALS) Increment 1B, beginning in FY10, provides for integration and testing into the avionics of the CVN/LHA/LHD Air Wings, and DDG Air Detachments for all USN Seabased Aircraft, including but not limited to: MH-60R/S, F/A-18E/F, EA-18G, E-2D, and C-2A. Additionally, trade studies and risk reduction activities will be pursued on additional sea based USN/USMC aircraft.   |         |         |              |   |               |         |         |                           |                     |                  |            |
| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)   |         |         |              |   |               |         |         | FY 2010                   | FY 2011             | FY 2012          |            |
| <b>Title:</b> Lead Platform Integration<br><br><b>Articles:</b><br><br><b>Description:</b> This effort includes development, integration, and testing of the MH-60R/S. JPALS Inc 1B provides the Navy with aircraft that are JPALS capable in 2015 and out in the CVN/LHA/LHD Air Wings, and the DDG-1000 Air Detachment.<br><br><b>FY 2010 Accomplishments:</b><br>JPALS MH-60R/S System Requirements Review(SRR)-1.<br><br><b>FY 2011 Plans:</b><br>Initial design efforts for JPALS on MH-60R/S. Conduct SRR-2 and System Functional Review (SFR).<br><br><b>FY 2012 Plans:</b><br>Complete Milestone B JPALS MH-60R/S Preliminary Design Review (PDR). |         |         |              |   |               |         |         | 8.574                     | 28.137              | 30.502           |            |
|  |         |         |              |   |               |         |         | 0                         | 0                   | 0                |            |
|  |         |         |              |   |               |         |         |                           |                     |                  |            |
|  |         |         |              |   |               |         |         |                           |                     |                  |            |
| <b>Title:</b> Follow-on Platform Integration<br><br><b>Articles:</b><br><br><b>Description:</b> This effort includes development, integration, and testing of the F/A-18E/F, EA-18G, E-2D, and C-2A, providing the Navy with aircraft that are JPALS capable in 2019 and out. Additionally, trade studies and risk reduction activities will be pursued on additional sea based USN/USMC aircraft.<br><br><b>FY 2011 Plans:</b><br>Continue JPALS trade studies, risk reduction, and design activities for applicable CVN aircraft.<br><br><b>FY 2012 Plans:</b>   |         |         |              |   |               |         |         | -                         | 9.849               | 18.416           |            |
|  |         |         |              |   |               |         |         |                           | 0                   | 0                |            |
|  |         |         |              |   |               |         |         |                           |                     |                  |            |
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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Navy  |                |                |   |                        |                          |   | <b>DATE:</b> February 2011 |                |                |                             |                   |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>1319: <i>Research, Development, Test &amp; Evaluation, Navy</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>   |                |                | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i> |                        |                          | <b>PROJECT</b><br>3228: <i>JPALS 1B</i> |                            |                |                |                             |                   |
| <b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>   |                |                |   |                        |                          |   |                            |                |                |                             |                   |
|   |                |                |   |                        |                          |   | <b>FY 2010</b>             | <b>FY 2011</b> | <b>FY 2012</b> |                             |                   |
| Continue JPALS trade studies, risk reduction, and design activities for applicable CVN aircraft. JPALS F/A-18E/F & EA-18G SRR-2/System Functional Review.   |                |                |   |                        |                          |   |                            |                |                |                             |                   |
| <b>Accomplishments/Planned Programs Subtotals</b>   |                |                |   |                        |                          |   | 8.574                      | 37.986         | 48.918         |                             |                   |
| <b>C. Other Program Funding Summary (\$ in Millions)</b>  |                |                |   |                        |                          |   |                            |                |                |                             |                   |
| <b>Line Item</b>  | <b>FY 2010</b> | <b>FY 2011</b> | <b>FY 2012<br/>Base</b>   | <b>FY 2012<br/>OCO</b> | <b>FY 2012<br/>Total</b> | <b>FY 2013</b>                          | <b>FY 2014</b>             | <b>FY 2015</b> | <b>FY 2016</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • APN/0573: <i>JPALS</i>  | 0.000          | 0.000          | 0.000   | 0.000                  | 0.000                    | 0.000                                   | 46.500                     | 115.298        | 197.575        | 3,256.100                   | 3,615.473         |
| <b>D. Acquisition Strategy</b><br>JPALS Technology Development phase was conducted jointly by NAVAIRSYSCOM (PMA213), USAF Electronic Systems Command (Global Air), and multiple industry partners. This effort provided the concept of operations, performance specifications and technology readiness levels necessary to provide the foundation from which to launch the Increment 1 System Development and Demonstration (SDD) phase development. As Lead Service, the Navy will manage the Joint Program to develop all JPALS increments. The JPALS capability will be incrementally acquired based on technology maturity and service needs. An updated JPALS Acquisition Strategy separates Increment 1 into two Increments (Inc 1A and Inc 1B). JPALS Increment 1A provides for development, integration, installation, and test of Sea Based JPALS. JPALS Increment 1B provides for integration and testing into the avionics of the CVN/LHA/LHD Air Wings, and DDG Air Detachments. JPALS Inc 1B will consist of the procurement of airborne systems that are modifications to original equipment manufacture aircraft and integration to existing avionics. |                |                |   |                        |                          |   |                            |                |                |                             |                   |
| <b>E. Performance Metrics</b><br>Milestone B scheduled for 3rd quarter 2012.  |                |                |   |                        |                          |   |                            |                |                |                             |                   |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy** **DATE:** February 2011

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|---|---|----------------------------------|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>1319: Research, Development, Test & Evaluation, Navy<br>BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603860N: JT Precision Approach & Ldg<br>Sys | <b>PROJECT</b><br>3228: JPALS 1B |
|---|---|----------------------------------|

| Product Development (\$ in Millions)     |                              |                                   |                              | FY 2011 |               | FY 2012<br>Base |               | FY 2012<br>OCO |               | FY 2012<br>Total |                     |            |                                |
|--|------------------------------|-----------------------------------|------------------------------|---------|---------------|-----------------|---------------|----------------|---------------|------------------|---------------------|------------|--------------------------------|
| Cost Category Item                       | Contract<br>Method<br>& Type | Performing<br>Activity & Location | Total Prior<br>Years<br>Cost | Cost    | Award<br>Date | Cost            | Award<br>Date | Cost           | Award<br>Date | Cost             | Cost To<br>Complete | Total Cost | Target<br>Value of<br>Contract |
| Aircraft Integration-Non Specific        | Various                      | Var:Var                           | 2.863                        | 9.031   | Dec 2010      | 0.500           | Mar 2012      | -              |               | 0.500            | 79.126              | 91.520     | 91.520                         |
| Aircraft Integration-F/A-18E/F & EA-18G  | Various                      | Boeing:St. Louis, MO              | 2.808                        | 18.053  | Dec 2010      | 7.950           | Dec 2011      | -              |               | 7.950            | 157.652             | 186.463    | 184.563                        |
| Aircraft Integration-MH-60R/S            | Various                      | Lockheed<br>Martin:Owego, NY      | 1.600                        | 5.799   | Dec 2010      | 17.253          | Mar 2012      | -              |               | 17.253           | 134.378             | 159.030    | 157.300                        |
| Aircraft Integration-F/A-18 E/F & EA-18G | WR                           | NAWCAD:China Lake, CA             | -                            | 0.150   | Dec 2010      | -               |               | -              |               | -                | 76.100              | 76.250     |                                |
| Aircraft Integration-MH-60R/S            | Various                      | Sikorsky:Stratford, CT            | 0.600                        | -       |               | 8.298           | Mar 2012      | -              |               | 8.298            | 59.702              | 68.600     | 68.600                         |
| Aircraft Integration-E-2D                | Various                      | Northrop<br>Grumman:Bethpage, NY  | 0.600                        | -       |               | 0.600           | Jan 2012      | -              |               | 0.600            | 250.900             | 252.100    | 252.100                        |
| Aircraft Integration-C-2A                | TBD                          | Rockwell Collins:Cedar Rapids, IA | -                            | -       |               | 0.300           | Jan 2012      | -              |               | 0.300            | 139.804             | 140.104    | 140.104                        |
| <b>Subtotal</b>                          |                              |                                   | 8.471                        | 33.033  |               | 34.901          |               | -              |               | 34.901           | 897.662             | 974.067    |                                |

**Remarks**

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| Support (\$ in Millions)     |                              |                                   |                              | FY 2011 |               | FY 2012<br>Base |               | FY 2012<br>OCO |               | FY 2012<br>Total |                     |            |                                |
|------------------------------|------------------------------|-----------------------------------|------------------------------|---------|---------------|-----------------|---------------|----------------|---------------|------------------|---------------------|------------|--------------------------------|
| Cost Category Item           | Contract<br>Method<br>& Type | Performing<br>Activity & Location | Total Prior<br>Years<br>Cost | Cost    | Award<br>Date | Cost            | Award<br>Date | Cost           | Award<br>Date | Cost             | Cost To<br>Complete | Total Cost | Target<br>Value of<br>Contract |
| Integrated Logistics Support | WR                           | NAWCAD:Pax River, MD              | 0.481                        | 0.364   | Dec 2010      | 1.150           | Nov 2011      | -              |               | 1.150            | 7.423               | 9.418      |                                |
| Engineering Support          | WR                           | NAWCAD:Pax River, MD              | -                            | -       |               | 3.150           | Nov 2011      | -              |               | 3.150            | 0.000               | 3.150      |                                |
| <b>Subtotal</b>              |                              |                                   | 0.481                        | 0.364   |               | 4.300           |               | -              |               | 4.300            | 7.423               | 12.568     |                                |

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy   |                        |                                |                        |   |            |              |            |                           |            |               | DATE: February 2011 |            |                          |  |
| APPROPRIATION/BUDGET ACTIVITY<br>1319: Research, Development, Test & Evaluation, Navy<br>BA 4: Advanced Component Development & Prototypes (ACD&P) |                        |                                |                        | R-1 ITEM NOMENCLATURE<br>PE 0603860N: JT Precision Approach & Ldg Sys |            |              |            | PROJECT<br>3228: JPALS 1B |            |               |                     |            |                          |  |
| Test and Evaluation (\$ in Millions)   |                        |                                |                        | FY 2011   |            | FY 2012 Base |            | FY 2012 OCO               |            | FY 2012 Total |                     |            |                          |  |
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost  | Award Date | Cost         | Award Date | Cost                      | Award Date | Cost          | Cost To Complete    | Total Cost | Target Value of Contract |  |
| Developmental Test & Evaluation  | WR                     | NAWCAD:Pax River, MD           | 0.124                  | 3.748   | Dec 2010   | 0.460        | Nov 2011   | -                         |            | 0.460         | 33.815              | 38.147     |                          |  |
| Subtotal   |                        |                                | 0.124                  | 3.748   |            | 0.460        |            | -                         |            | 0.460         | 33.815              | 38.147     |                          |  |
| Management Services (\$ in Millions)   |                        |                                |                        | FY 2011   |            | FY 2012 Base |            | FY 2012 OCO               |            | FY 2012 Total |                     |            |                          |  |
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost  | Award Date | Cost         | Award Date | Cost                      | Award Date | Cost          | Cost To Complete    | Total Cost | Target Value of Contract |  |
| Government Engineering Support   | WR                     | NAWCAD:Pax River, MD           | 0.952                  | 0.841   | Dec 2010   | 6.957        | Nov 2011   | -                         |            | 6.957         | 3.192               | 11.942     |                          |  |
| PM Support   | WR                     | NAWCAD:Pax River, MD           | 0.546                  | -   |            | 1.150        | Nov 2011   | -                         |            | 1.150         | 0.000               | 1.696      |                          |  |
| PM Support-MSS   | C/CPFF                 | Amelex:California, MD          | -                      | -   |            | 1.150        | Jan 2012   | -                         |            | 1.150         | 0.000               | 1.150      | 1.150                    |  |
| Subtotal   |                        |                                | 1.498                  | 0.841   |            | 9.257        |            | -                         |            | 9.257         | 3.192               | 14.788     |                          |  |
|  |                        |                                | Total Prior Years Cost | FY 2011   |            | FY 2012 Base |            | FY 2012 OCO               |            | FY 2012 Total | Cost To Complete    | Total Cost | Target Value of Contract |  |
| Project Cost Totals  |                        |                                | 10.574                 | 37.986  |            | 48.918       |            | -                         |            | 48.918        | 942.092             | 1,039.570  |                          |  |
| Remarks  |                        |                                |                        |   |            |              |            |                           |            |               |                     |            |                          |  |

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| Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy  |  | DATE: February 2011              |
| APPROPRIATION/BUDGET ACTIVITY<br>1319: <i>Research, Development, Test &amp; Evaluation, Navy</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | R-1 ITEM NOMENCLATURE<br>PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i> | PROJECT<br>3228: <i>JPALS 1B</i> |
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| Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy  |  | DATE: February 2011              |
| APPROPRIATION/BUDGET ACTIVITY<br>1319: <i>Research, Development, Test &amp; Evaluation, Navy</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | R-1 ITEM NOMENCLATURE<br>PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i> | PROJECT<br>3228: <i>JPALS 1B</i> |
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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy   |   |   | <b>DATE:</b> February 2011 |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>1319: <i>Research, Development, Test &amp; Evaluation, Navy</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i> | <b>PROJECT</b><br>3228: <i>JPALS 1B</i> |                            |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>JPALS INC 1B</b>  |         |      |         |      |
| Acquisition Milestones: Aircraft Systems Spec Lockdown/ System Requirements Review (SRR) I               | 4       | 2010 | 4       | 2010 |
| Acquisition Milestones: Milestone B  | 3       | 2012 | 3       | 2012 |
| Acquisition Milestones: Milestone C  | 3       | 2014 | 3       | 2014 |
| Acquisition Milestones: Initial Operational Capability (IOC)   | 2       | 2016 | 2       | 2016 |
| Systems Development: Lead Platform MH-60R/S: Trade Studies MH-60 R/S                                     | 1       | 2010 | 3       | 2012 |
| Systems Development: Lead Platform MH-60R/S: MH-60R/S Design, build, test                                | 3       | 2012 | 1       | 2016 |
| Systems Development: Lead Platform MH-60R/S: MH-60R/S Engineering Development Model (EDM) Deliveries 1-4 | 3       | 2013 | 3       | 2013 |
| Systems Development: Reviews: MH-60R/S SRR 2 / System Functional Review (SFR)                            | 3       | 2011 | 3       | 2011 |
| Systems Development: Reviews: MH-60R/S Preliminary Design Review (PDR)                                   | 2       | 2012 | 2       | 2012 |
| Systems Development: Reviews: MH-60R/S Critical Design Review (CDR)                                      | 2       | 2013 | 2       | 2013 |
| Systems Development: F/A-18E/F & EA-18G: Trade Studies F/A-18E/F, EA-18G                                 | 1       | 2010 | 1       | 2014 |
| Systems Development: F/A-18E/F & EA-18G: F/A-18 E/F, EA-18 Design, build, test                           | 1       | 2014 | 4       | 2016 |
| Systems Development: F/A-18E/F & EA-18G: F/A18-E/F &EA-18G EDM Deliveries 1-7                            | 2       | 2016 | 2       | 2016 |
| Systems Development: Reviews: F/A18-E/F & EA-18G SRR 2 / SFR   | 3       | 2012 | 3       | 2012 |
| Systems Development: Reviews: F/A18-E/F & EA-18G PDR   | 3       | 2013 | 3       | 2013 |
| Systems Development: Reviews: F/A18-E/F & EA-18G CDR   | 3       | 2014 | 3       | 2014 |
| Systems Development: E-2D: E-2D Trade Studies & Risk Reduction   | 2       | 2010 | 4       | 2016 |
| Systems Development: Reviews: E-2D SRR 2 / SFR   | 1       | 2016 | 1       | 2016 |
| Systems Development: C-2A: C-2A Trade Studies & Risk Reduction   | 2       | 2010 | 4       | 2016 |
| Systems Development: Reviews: C-2A SRR 2 / SFR   | 3       | 2016 | 3       | 2016 |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Navy   |   |   | <b>DATE:</b> February 2011 |
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>1319: <i>Research, Development, Test &amp; Evaluation, Navy</i><br>BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603860N: <i>JT Precision Approach &amp; Ldg Sys</i> | <b>PROJECT</b><br>3228: <i>JPALS 1B</i> |                            |

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| Systems Development: LH & Land Based Aircraft: LH & Land Based Aircraft Trade Studies & Risk Reduction | 2       | 2013 | 4       | 2016 |
| Test and Evaluation: MH-60R/S Initial Test and Evaluation (IT&E)/Operational Assessment (OA)           | 3       | 2013 | 2       | 2014 |
| Test and Evaluation: MH-60R/S Operational Testing (OT)   | 3       | 2015 | 4       | 2015 |
| Test and Evaluation: F/A18-E/F & EA-18G IT&E/OA  | 2       | 2015 | 4       | 2016 |
| Production Milestones: MH-60R/S Long Lead Procurement  | 1       | 2014 | 1       | 2014 |
| Production Milestones: MH-60R/S Low Rate Initial Production (LRIP) APN Procurement                     | 3       | 2014 | 3       | 2014 |
| Production Milestones: Start Production Installation MH-60 R/S   | 2       | 2016 | 4       | 2016 |
| Deliveries: LRIP APN Deliveries 1-2  | 1       | 2015 | 1       | 2015 |

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